Chemical & Engineering NEWS
March 3, 1980

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U.S.-Soviet Technology Exchange

Afghanistan changes the rules Page 35

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Cover: St. Basil's cathedral in Moscow. Photo by Marvin Ickow/ Uniphoto

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Corporate political activity on the rise

More than 700 corporate political action committees have been set up since 1975; candidates received $9.8 million from them in 1977–78

Political Action Committees (PAC's), organizations put together to raise funds for political candidates, are playing an increasingly larger role in financing federal election (particularly Congressional) campaigns. During 1974 the average candidate for a House seat received $10,500 from PAC's; by 1978 that figure had increased to $28,000. In the same period the number of PAC's increased from 722 to 1653.

Most of this phenomenal growth can be traced to a ruling by the Federal Election Commission in early 1975 that made it clear that corporations, as well as labor unions and trade associations, could establish and administer PAC's. And corporations were not slow to take advantage of the ruling. At the end of 1974 there were only 90 corporate PAC's. By the end of 1978, corporations had established 808 PAC's, some 20 of which were sponsored by chemical companies. By comparison, the number of labor union PAC's increased only 16 to a total of 217, whereas the number sponsored by trade, membership, and medical associations increased 133 to a total of 451.

PAC's operate by soliciting voluntary contributions from their employees, stockholders, and members. Currently PAC's can contribute up to $5000 to a candidate for each election (primary, runoff, or general). However, the House has approved a bill, now in conference, that would limit PAC contributions to $3000 per election for House races, and prohibit House candidates from receiving more than $70,000 from all PAC's, during any two-year election cycle. The limits on how much a Senate candidate could receive would not be changed. PAC's can also make non-monetary contributions to a candidate's race, such as sponsoring mass mailings.

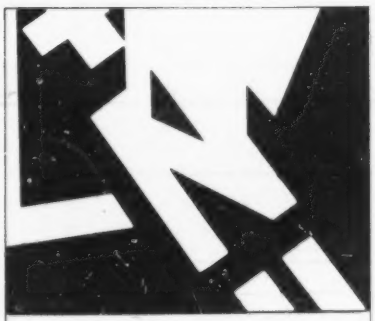
The sponsoring organization cannot give money to a PAC for political contributions, but it can allocate money to cover administrative costs of the committee. Each PAC must register with and report to the Federal Election Commission, which monitors all receipts, disbursements, and contributions to candidates running for federal office. Funds left over at the end of any two-year election cycle can be carried over into the next cycle.

Though corporate PAC's account for more than half of all PAC's, they are far from being the largest money raisers for political candidates. That honor goes, according to a study by the Business Roundtable, to those sponsored by medical and other membership organizations. For the two-year election cycle beginning in January 1977 and ending in December 1978 such organizations collected $25.2 million and contributed $11.5 million to federal candidates. Labor PAC's raised $19.8 million and con-

Dow accounted for 31% of chemical firm PAC's spending during 1977–78

			Contributions to candidates				
			Senate		House		
Company	Receipts	Disbursements	Democrat	Republican	Democrat	Republican	Total
Dow Chemical	$202,628	$191,625	$5,140	$34,250	$25,050	$77,040	$141,480
FMC	90,168	92,437	8,000	18,600	23,000	38,550	88,150
Monsanto	78,111	76,755	7,000	13,000	20,200	16,550	56,750
Olin	47,764	60,740	4,250	11,508	4,975	12,801	33,534
American Cyanamid	41,984	26,752	2,250	13,175	2,925	6,646	24,996
Stauffer Chemical	29,229	29,795	1,000	14,300	1,600	12,395	29,295
Allied Chemical	18,824	16,735	2,650	5,450	1,900	4,400	14,400
Borg-Warner	17,494	7,009	0	3,171	900	2,900	6,971
Ethyl Corp.	16,589	11,300	5,500	4,000	2,500	1,050	13,050
Borden	16,462	5,212	150	2,100	800	2,150	5,200
Celanese	16,403	15,300	700	4,050	4,700	5,600	15,050
Diamond Shamrock	14,704	9,150	500	3,250	700	2,700	7,150
Cabot Corp.	12,885	10,275	1,000	4,325	2,450	2,100	9,875
PPG Industries	12,704	12,200	1,000	9,600	200	600	11,400
Hercules	10,757	12,225	200	3,600	1,600	5,000	10,400
Ciba-Geigy	10,697	6,400	900	800	1,450	3,050	6,200
Goodyear	9,364	5,200	500	2,700	100	1,500	4,800
Rohm & Haas	7,131	6,700	0	0	0	2,250	2,250
W. R. Grace	5,239	4,800	1,000	800	1,100	900	3,800
B. F. Goodrich	4,060	0	0	0	0	0	0
TOTAL	**$663,197**	**$600,610**	**$41,740**	**$148,679**	**$96,150**	**$198,182**	**$484,751**

Source: Federal Election Commission



N-Nitrosamines

ACS Symposium Series No. 101

Jean-Pierre Anselme, *Editor*
University of Massachusetts

A symposium presented at the Eighth Northeast Regional Meeting of the American Chemical Society.

Fear of human exposure to known carcinogens and mutagens in the workplace, in the environment, and in consumer products (foods, cosmetics, pharmaceuticals, and pesticides) has triggered a dynamic interest in *N*-nitrosamine chemistry.

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tributed $10.3 million. Corporate PAC's raised $17.7 million and contributed $9.8 million.

Some $21.5 million in PAC funds went to Democratic candidates, with labor unions providing 45% of the total. Medical and other membership associations accounted for 23%; corporations, 16%; the Democratic Party, 8%; and nonaffiliated PAC's, 8%. As might be expected, of the $19.8 million given by PAC's to Republican candidates, labor unions supplied only 3%; medical and membership associations supplied 32%; corporations, 30%; the Republican Party, 23%; and nonaffiliated groups, 12%.

One half of a per cent of all PAC's accounted for nearly one quarter of all contributions made by these organizations in 1977–78, the study found. The 10 largest PAC contributors to federal candidates (excluding the Democratic and Republican parties themselves) were sponsored by membership groups or labor unions.

The American Medical Association led the list of the five largest contributors with $1.6 million. It was followed by the National Association of Realtors, $1.1 million; National Automobile Dealers Association, $975,675; United Auto Workers, $964,465; and the AFL-CIO, $920,841. The largest corporate PAC contributor, sponsored by International Paper Co., gave $173,056.

Dow Chemical, by far the most enthusiastic chemical company sponsor of PAC's, was not far behind. FEC records show that Dow has set up eight PAC's.

Dow is also by far the most successful of the chemical companies at fund raising. In the 1977–78 two-year election cycle, the Dow PAC's raised a total of $202,628 and contributed $141,480 to federal candidates. Altogether, PAC's sponsored by the 20 chemical companies (not including primarily drug or oil companies) raised $663,197 and contributed $484,751. Their contributions are likely to be greater in the future since many of the PAC's were established as recently as 1978, and more are likely to be established as the 1980 elections draw nearer.

The pattern of chemical company PAC contributions closely follows that of other corporate PAC's. Democratic candidates received slightly more than 28% of chemical company PAC contributions, and Republicans got the remaining 72%. Senate candidates got 40% and House candidates 60% of the contributions. For all corporations, the Roundtable study shows, Democrats received 35% of the contributions, Republicans 65%, Senate candidates 35%, and House candidates 65%. □

Federal Alert—*new legislation*

This report lists legislation introduced between Jan. 22 and Feb. 20. Senate and House bills are listed under subject area by bill number, primary sponsor, and the committee(s) to which referred.

SENATE

Authorization. S. 2240—Cannon (D.-Nev.). Sets NASA's fiscal 1981 budget ceiling at $5.7 billion; referred to Commerce, Science & Transportation.[a]

S. 2320—Cannon (D.-Nev.). Sets NBS's fiscal 1981 budget ceiling at $87.7 million; referred to Commerce, Science & Transportation.[a]

Energy. S. 2202—Weicker (R.-Conn.). Cuts imports of petroleum and its products from OPEC immediately at least 30%; referred to Finance.

Research. S. 2234—Stevenson (D.-Ill.). Requires persons, organizations conducting recombinant DNA research, not supported by NIH funds, to notify Secretary of Health & Human Service of their activities; referred to Labor & Human Resources.

Transportation. S. 2245—Cannon (D.-Nev.). Prohibits Interstate Commerce Commission from wholesale removal of operating restrictions on motor carrier industry; referred to Commerce, Science & Transportation.

HOUSE

Authorization. H.R. 6495—Price (D.-Ill.). Sets DOD's fiscal 1981 RDT&E budget ceiling at $16.6 billion; referred to Armed Services.

Energy. H.R. 6260—McCormack (D.-Wash.). Provides $20 billion for accelerated fusion energy RD&D program; referred to Science & Technology.

Health. H.R. 6377—Daschle (D.-S.D.). Provides presumption of service connection for occurrence of certain diseases in veterans who were exposed to agent orange; referred to Veterans Affairs.

Patents. H.R. 6533—Railsback (R.-Ill.). Establishes uniform federal patent procedures for universities, small businesses; referred to Judiciary.

Science. H.R. Res. 487—Brown (D.-Calif.). Calls for restrictions on U.S.-Soviet science exchanges for one year; referred to Foreign Affairs.

H.R. 6521—Wampler (R.-Va.). Establishes National Science Council to decide questions of scientific fact that arise in agency proceedings to regulate chemical substances; referred to Agriculture, Interstate & Foreign Commerce, Science & Technology.

H.R. 6556—Traxler (D.-Miss.). Would allow National Medal of Science also to be awarded for contributions in social and behavioral science; referred to Science & Technology.

Space. H.R. 6304—Brown (D.-Calif.). Sets goals and policies for civilian space program; referred to Science & Technology.

a Administration bill.

U.S.-Soviet technology trade outlook chilly

Invasion of Afghanistan promises significant cutbacks in sales of know-how and technological products; Third World problems are seen as next theater of confrontation

Wil Lepkowski
C&EN, Washington

For the past several weeks, ever since the Soviets invaded Afghanistan and the Carter Administration cut off grain sales and then the export of high technology to the Soviet Union, a debate has been rising in Washington over how much U.S. technology should be flowing to the Soviet Union.

New policies are bound to emerge once the Administration completes its review of a "post-Afghanistan" technology policy toward America's ideological adversary. Some companies, such as Occidental Petroleum, Dow Chemical, Control Data Corp., and others who trade directly with the U.S.S.R., say the U.S. will be hurt more than helped by the ban on trade. Others say all efforts to aid the Soviet economy should cease because the Soviet Union is the U.S.'s sworn enemy.

Just what the review will say is impossible to determine now. But more restrictions on a broader range of products, processes, and know-how are expected. Last week's embargo of Occidental Petroleum shipments of phosphate to the U.S.S.R. could be a harbinger of tough new controls. Even a curtailment of technical activities between universities is expected.

Says deputy assistant Defense secretary Ellen L. Frost, "We are devoting more attention to the Soviet learning curve in advanced technology. Imports from the West may supply crucial learning experiences which permit an overall advance in Soviet capabilities. We don't know how to measure this 'ripple effect,' but it is safe to assume that it is there and the Soviets place great value on it."

Whatever controls are established, it is obvious that technology policy toward the Soviet Union encompasses issues that go far beyond weapons-system diversion. In chemical technology alone, the issues range from help in enabling the Soviet Union to produce chemical warfare weaponry to the general effect of chemical process control on raising industrial productivity.

Even the unrestricted flow of research on chemical thermodynamics is helping the Soviets establish more refined theories to guide their version of social evolution. That, of course, isn't, shouldn't, and anyway couldn't be stopped. But it is part of the picture, too.

Détente was the guiding spirit behind the rich volume of technology transfer until Afghanistan caught it short. It began in the middle 1960's when the Soviet Union made an important decision bearing on its central goal of burying capitalism. It determined that science and technology would be the fundamental force in the struggle. However, Soviet leaders knew they would have to learn from the West how to manage technology. For the key to commanding technology was management, and those skills lay mainly in the U.S. with its management information systems.

That was why détente—an advanced form of peaceful coexistence—came into being. Technology was to be its kingpin. Arms control was to be the safety device for keeping the capricious Americans off the nuclear trigger. America, many analysts say, bought détente without really understanding what the U.S.S.R. was up to. U.S. policy leaders naively saw it as an opportunity to convert the Soviet Union to capitalism.

So just as President Franklin D. Roosevelt established the Export-Import Bank to finance Soviet-U.S. trade in the 1930's, the Nixon Administration led by Secretary of State Henry Kissinger launched technology transfer negotiations between U.S. corporations and the Soviet Union. Soviet ministers were allowed into corporate boardrooms and made privy to the most cherished capitalist secrets. By 1973 a U.S.-Soviet Trade Council was established and technology-borne détente was really winging.

Two technologies were emphasized: computers and chemicals. A modern chemical plant is the essence

C&EN staff photos

Brady: Illegal transfers were costly

Perry: guidelines don't need revision

U.S. exported some innovative chemical technology to Soviets during the 1970's

Product	Typical product uses	Year of contract	Process and/or raw materials	Features
Acetic acid	Acetates for textiles, computer tapes	1973	Low-pressure process using methanol and carbon dioxide	Low-pressure process considered significantly better than earlier processes. Uses highly selective catalyst system and provides high yields. As of January 1976, license granted to six companies worldwide with manufacturing capacity of almost 1.3 million metric tons. Process termed "best in world" by Soviet trade official
Ammonia	Fertilizers, explosives, refrigerants, nylon, nitric acid, and acrylonitrile	1969–71 1973–76	Catalytic reaction of nitrogen from air with hydrogen obtained from high-pressure reforming of hydrocarbons (usual source is natural gas)	Plants characterized by large single-train installations that employ centrifugal compressors, an integrated energy system, and improved catalysts. Process permits sharp reductions in investment and production costs compared to earlier processes. Unit inputs of electric power, water, and manpower substantially reduced. Half of world's ammonia in 1977 may have been produced in plants using this technology
Butadiene	Synthetic rubber, nylon fibers, and resins	1970	One-stage dehydrogenation of butane (Catadiene process)	Uses large-capacity reactors, turbocompressors, and automated control system. Installation purchased by U.S.S.R. reportedly was largest "Catadiene" plant in the world, with annual production capacity of 90,000 tons of butadiene. Soviets claim the one-stage process permits a 40% reduction in unit investment and production costs and at least doubles labor productivity compared to the existing two-stage process
***p*-Xylene**	Polyester fibers, films, and resins	1976	Separation of *p*-xylene from mixed xylene feedstocks by continuous, selective adsorption. Uses fixed bed of solid adsorbent	Claims include increased yields, reduced investment and production costs. Process minimizes corrosion
Polyethylene (high-density)	Pipe, film, wire and cable, food and beverage containers, shipping drums	1974 1977	Gas-phase process for manufacture of high-density polyethylene from ethylene. Fluidized-bed reactor is used	Licensor claims savings of 25% in capital investment and 15% in operating costs, compared to the most efficient competing processes (November 1975). No solvents or dispersants are required as reactant carriers, thus reducing pollutants

Source: Central Intelligence Agency

of efficient technological management and the Soviets wanted that know-how as well as a strong share of future chemical export markets. (Watchful critics of the process were reminding the uncommitted that Hitler also had known chemistry's importance and thus secured the German chemical cartel I. G. Farben to pour its global technological and financial resources into building a war economy.)

Computers were important for obvious reasons. Microprocessors, of course, run modern chemical plants and the Soviets wanted that knowledge. But computers were related to everything else as well, from military command and control systems to the management of an entire economy. Economic management was the main reason the Soviets wanted so much to buy computer hardware and technology from Control Data Corp.

Americans were happy to sell (trade was almost out of the question because the Soviets, until they built their western-designed chemical industry, had almost nothing comparable to sell in return) and the Soviets were more than happy to buy because such technology would keep world communism right on target.

In chemicals, the Soviets established a deft policy. Knowing their country lacked enough hard currency to pay for the buildup of a western-style chemical industry, Soviet leaders on the State Committee for Science & Technology negotiated a buy-back policy in return for the financing. They would secure loans from western financial institutions to construct chemical plants and, to repay those loans, "sell" the products back to those firms.

That policy, for example, was the keystone of the currently controversial 1973 agreement between the Soviets and Armand Hammer's Occidental Petroleum. Hammer would ship the Soviets superphosphoric acid fertilizer, and would receive Soviet ammonia made in western-built and -financed plants. As a bonus to the Soviets, their agriculture also would be helped.

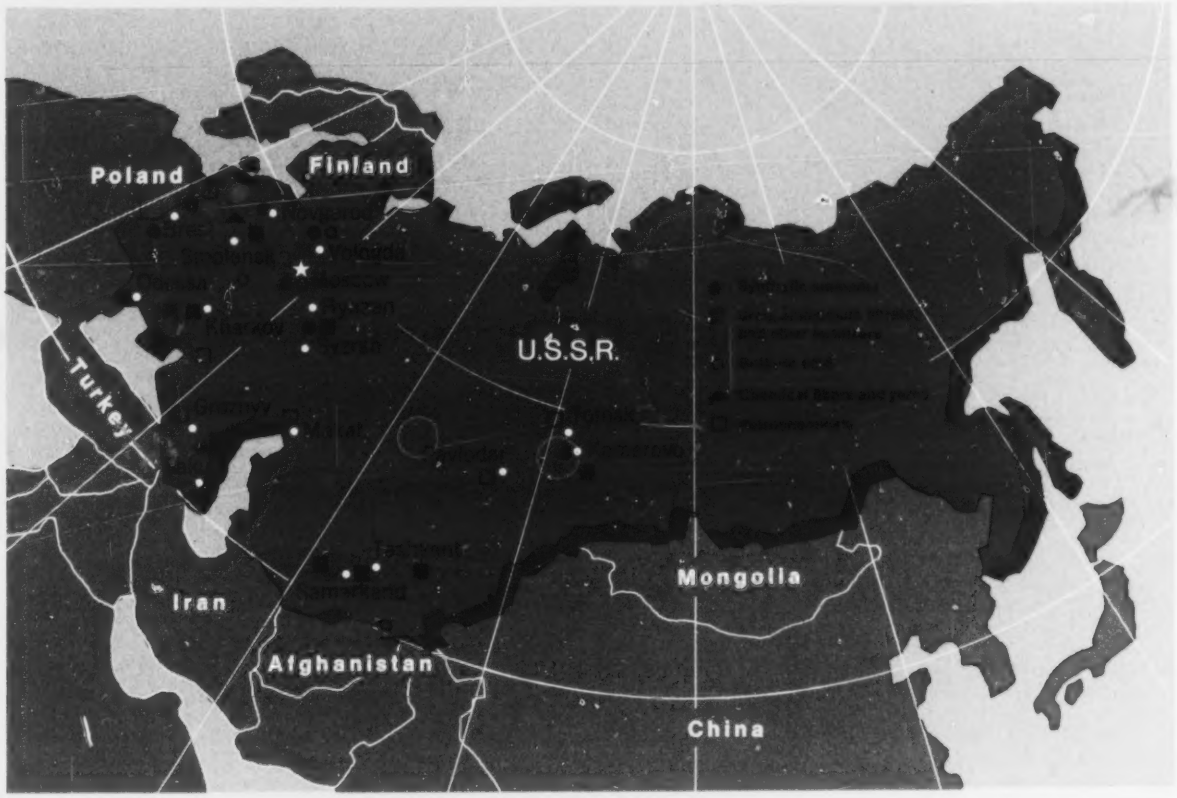
But nothing works perfectly for anyone, not even those who play the Soviet brand of geopolitical/technological chess. Détente began breaking down in the summer of 1978 over Soviet squelching of scientific dissidents. And it currently lies shattered because of the invasion of Afghanistan. Now, Soviet and U.S. strategists are rethinking everything. A Cold War mentality has returned and the time is being used here and there to find out how to think about technological relations in a world on the brink of economic, political, and raw materials chaos.

The consensus on both sides is that détente has not been working out too well for either side. For those Soviet leaders who were always skeptical of too much ideological idealism and who emphasize power politics, détente only meant opening the U.S.S.R.'s society too widely to western contamination. For U.S. skeptics, giving U.S. technology meant not only strengthening the economy of an adversary but the risk of diverting that technology to arms. Afghanistan demonstrated their worst fears and now there are vengeful second thoughts.

Indeed, testimony over the past three weeks by former acting director of Export Administration, Lawrence Brady, revealed substantial diversion of U.S. technology into Soviet military machinery. Brady says that because he tried to alert Commerce Department superiors to lax enforcement of the Export Administration he was forced to resign.

In testimony before the Senate Armed Services Committee early last month, Brady asserted, "The illegal

Many major Soviet chemical plants were built with western technology



transfer of the technology has given such an advantage to the Soviet Union that it will require hundreds of millions of dollars of additional expenditure by the federal government even to begin to overcome the technical advantages which the Soviet bloc has acquired."

He went on to criticize the "unregulated transfers of technical data" between U.S. corporations and Soviet technical ministries during the height of détente, when reporting the details of transactions was not required. "In certain instances," he says, "some firms have been willing to make short-term profit at the expense of the long-term interests of our nation."

The nexus of the debate is not really whether all trade should stop. Most of the debate is over what should go from the West to the Soviet Union, especially since U.S. allies enthusiastically sell sophisticated products to the Soviet Union. There are extensive lists of restricted items that the Coordinating Committee (CoCom)—made up of North Atlantic Treaty Organization countries—has drawn up. To sell such items requires exceptions. Part of the government's review of export policy includes a review of the CoCom list.

Undersecretary of Defense William J. Perry says the CoCom guidelines do not appear to need revision. But the President is reviewing proposed new guidelines for computers and some probably will be made more restrictive. Also, he says, new restrictions on technical data packages, computer software, process know-how, and technical support will be prepared. Some "critical materials" used in the manufacture of "advanced technology defense products" probably will be restricted, too.

But what of U.S. corporations? Evidence is clear that those that have signed agreements with the Soviets have a lot to lose if technological détente is shifted midstream.

"Practically everyone feels that this is not the time to promote trade," says one highly placed corporate official. "But what I imagine will happen is that after our election, and after their Party Congress, there will be another try at coexistence because there will be a new leadership. I'd look for a significant upsurge of interest again, assuming of course that the Soviets stop where they are."

Kempton Jenkins, president of the Soviet-U.S. Trade Council, says he hopes the Administration doesn't throw the baby out with the bath water. "The question is whether our policies will drive the Soviets back to autarchy and decelerate their engagement in the economic process. Whatever action the U.S. might take in the Afghanistan crisis, it is my hope that it will not be contrary to our own best interests.

"The Soviet natural gas resources in Siberia, which are almost impossible for the Soviets to develop unilaterally, could be of great importance to the energy-consuming western world in the decade ahead. It offers a great opportunity to promote interdependence. They would depend on the natural gas earning for hard currency while we would only be marginally dependent on the Soviet Union for natural gas."

Jenkins, who has to work with his Soviet counterparts in the Trade Council, has to choose his words with care. But by virtue of his position, it is clear he is a true believer in the concept of interdependence articulated by one of his mentors, former U.S. ambassador to the Soviet Union, Llewellyn Thompson. Said Thompson, "We're going to lure, seduce, draw the Soviets out of their society because their consumer appetites can't be suppressed. It's not going to be an ideological thing, ever."

Kellogg and Air Products lead U.S. firms in chemical engineering assistance to U.S.S.R.

Location	Product	Capacity (metric tons)	Completion	Contractor(C)/Licensor(L)/ Engineering(E)
Angarsk	Benzene	120,000/year	1979	Air Products (C)
Angarsk	Ammonia	1500/day	1980	Kellogg-Toyo-U.S.S.R. (L,E,C)
Caucasus	Benzene	100,000/year	1980	Air Products (C)
Cherepovets	Ammonia	1500/day	1979	Kellogg (L), Toyo (E)
Drogobych	Ammonia	1500/day	1979	Kellogg (L), Toyo (E)
Gorlovka	Ammonia	1500/day	1979	Creusot-Loire and Kellogg (C)
Grodno	Ammonia	1500/day	1979	Kellogg (L), Toyo (E)
Mozyr	Benzene	125,000/year	1981	Air Products (C)
Novgorod	Ammonia	1500/day	1979	Kellogg (L), Toyo (E)
Novomoskovsk	Ammonia	1500/day	1979	Kellogg (L), Toyo (E)
Odessa	Ammonia	1360/day	1979	Kellogg-Ensa-U.S.S.R. (L,E,C)
Perm	Ammonia Urea	1360/day 1500/year	1979	Kellogg (L), Toyo (C)
Perm	Ammonia	1500/day	1980	Kellogg-Toyo-U.S.S.R. (L,E,C)
Polotsk	Benzene	125,000/year	1981	Air Products (C)
Rossosh	Ammonia	1500/day	1979	Kellogg (L), Toyo (E)
Ryazan	Benzene	125,000/year	1981	Air Products (C)
Ufa	Linear alcohols	48,000/year	1980	Conoco (L), Foster Wheeler-Speichim (E)
Ufa	Benzene-xylene	125,000/year	1980	Technip (C), under construction by Procon International

Source: *Oil & Gas Journal*

Pro-Soviet-trade people see the need to review export control decision-making. But to cut off all trade would be disastrous for foreign policy and bad for the U.S. economy. Trade with the Soviets, they say, strengthens everyone. Commerce is neutral. Selling the Soviets grain, for example, was draining the Soviets of $2 billion in hard currency. It was helping build no war machine. The same reasoning was used by Occidental in justifying the sale of phosphoric acid to the Soviet Union.

One analyst who couldn't disagree more with the "mutual advantage" line of thought is Michael Dean of the Advanced International Studies Institute in Bethesda, Md. That institute specializes in studies of East-West strategic affairs and systematically follows Soviet policy. He says U.S. policy makers are too easily fooled by the Soviets through a form of wishful thinking that never takes account of what Soviet leaders say.

"All we have to do is read their speeches," he says. "They haven't changed one bit. There's nothing that could possibly lead us to believe that Brezhnev doesn't mean exactly what he says. When Defense Secretary Harold Brown said in his recent statement that we can't possibly know what Soviet intentions are, that was the prime example of this blindness. We have convinced ourselves that the Soviets cannot tell us the truth."

The key to understanding Soviet thinking, on technology in relation to everything else, has to do with a systems perspective that goes under the term, "correlation of forces." Analysts Dean, John J. Ford, and the Library of Congress' Joseph Whelan, as well as others, have explained it. In brief it is an interrelated compendium of six elements seen in context of the global evolution of communism: military, science, technology, economy, politics, and philosophy. The Soviets factor them all and decide when the time is ripe to advance.

"The problem we face in foreign policy," says Mark Miller of Systems Planning Corp. of Arlington, Va., and author of a study on the role of western technology in Soviet strategy, "is that we don't have a very good view of history or a conceptual framework, whereas the Soviets do. That is why our foreign policy is so capricious." Miller believes that Henry Kissinger's view of détente as pulling the Soviets slowly into an inextricable tie with the western economic system was misguided and uninformed.

"We tend to look at peaceful coexistence in its cooperative aspects," Miller points out. "The Soviets see it more in its competitive relevance. Soviet trade with the West has been the same since Peter the Great—to strengthen the basic sinews of national power, the military power of the state."

They still have the quest for universalism, adds Dean, still have the same geopolitical objectives as the czars, still are a police state, still an autocracy, still paranoid and suspicious (only more so), still self-righteous, and still need to spread the "true faith," which now is to rid the world of capitalism.

To Miller and Dean, the U.S. has to tell them it knows what they're up to, that it will do nothing to help them in their quest, directly or indirectly, and tell them that it is willing to risk war with them. Those are terms they understand, and never mind the consequences of nuclear war.

But that train of thought overreaches the scope of this article. Neither system has global nuclear war in its equation, although the Soviets are said by intelligence experts to be better prepared internally for any such eventuality. Their view is that the U.S. is more capricious than the U.S.S.R. in pulling the nuclear trigger.

There is an important "fringe" group of international technological observers whose views need to be noted for a complete scan of how technology, finance, capitalism, and communism interact worldwide. This is the "conspiratorial" school whose main spokesman is Antony C. Sutton, formerly of the Hoover Institution. Sutton wrote a three-volume work on U.S. technology transfer to the Soviet Union since the Bolshevik Revolution. Thus, his subsequent thoughts deserve a little airing.

Sutton's ideas are in his latest book, "Wall Street and the Bolshevik Revolution." To him, Wall Street (banks and corporations) have long been working together to lock up the world's wealth and subject the world's peoples to an orderly, humanistic, but totalitarian world government.

Sutton calls his book a story reflecting the betrayal of the Russian Revolution. "The tsars and their corrupt political system were ejected," he says, "only to be replaced by the new powerbrokers of another corrupt political system. Where the U.S. could have exerted its dominant influence to bring about a free Russia, it truckled to the ambitions of a few Wall Street financiers who, for their own purposes, could accept a centralized tsarist Russia or a centralized Marxist Russia but not a decentralized free Russia."

Sutton today lives in Arizona and publishes a newsletter that monitors financial political involvement around the world. But his views are generally rejected by the Millers and the Deans. Lawrence Brady, a former official in the Commerce Department's Export Administration, thinks the U.S. has been selling the Soviets

U.S. chemical exports to U.S.S.R. are worth almost twice imports from U.S.S.R.

First nine months 1979	Volume	Value ($ thousands)
U.S. EXPORTS TO U.S.S.R.		
Phosphoric acid, 65% or more P_2O_5	427,500 tons	$71,056
Cellulose compounds	17,024,920 lb	9,263
Ammonium compounds	108,928 lb	2,044
Industrial varnishes	677,224 gal	2,033
Plastic and rubber film and sheet	55,113 lb	1,718
Phosphoric acid esters	2,319,139 lb	1,606
Silicon	42,119 lb	1,245
***n*-Butyl alcohol**	4,502,573 lb	1,201
Calcium hypochlorite	2,162,659 lb	1,151
Chemical mixtures nec[a]	1,631,181 lb	1,081
Phosphoric acid, less than 65% P_2O_5	8,267 tons	951
Resorcinol	650,409 lb	942
Ethylene glycol	4,411,996 lb	760
Diagnostic reagents	na	577
Preparations, blood- or cardiovascular-related (human use)	na	559
Halogenated cyclic hydrocarbons	486,714 lb	455
Nonsteroid preparations	na	407
Manganese oxides	1,824,150 lb	296
Industrial paints	25,597 gal	287
Magnesium compounds	2,204,600 lb	279
Formaldehyde	551,650 lb	251
Vaccines, veterinary	na	219
Antibiotics, antineoplastic agents, agricultural pesticides	1,782 kg	210
Arsenic compounds	39,462 lb	199
Color lakes and toners	67,293 lb	176
Inorganic compounds nec[a]	85,046 lb	176
Drugs containing radioactive isotopes	47,502 millicuries	$175
Putty	24,238 lb	151
Synthetic organic chemicals nec[a]	33,000 lb	150
Acyclic organics nec[a]	105,000 lb	144
Veterinary biologicals nec[a]	na	130
Catalysts nec[a]	232,123 lb	130
Nitrogen compounds nec[a]	156,332 ib	128
Prepared culture media	4,394 lb	122
Laboratory reagents	1,189 lb	108
Inorganic acid esters	5,500 lb	89
Phosphorus compounds nec[a]	23,404 lb	85
Interior trade sale emulsion paints	7,000 gal	84
Perfumes	na	75
Aluminum compounds	53,970 lb	66
TOTAL EXPORTS VALUE		**$91,516**
U.S. IMPORTS FROM U.S.S.R.		
Ammonia	na	38,559
***p*-Xylene**	1,217,896 gal	3,176
Casein	3,519,873 lb	2,108
Inorganic bases, metallic oxides	199,007 lb	1,825
Potassium chloride or muriate of potash	13,346 tons	605
Chemical elements	na	507
Oils, distilled or essential	22,295 lb	134
Radioactive isotopes, chemical elements, and compounds nec[a]	110,310 millicuries	116
Uranium, thorium, and cerium compounds nec[a]	na	101
TOTAL IMPORTS VALUE		**$47,131**
U.S. TRADE SURPLUS		**$44,385**

a Not elsewhere classified. **na** = not available. **Source:** Commerce Department

strategically important technology but doesn't think much of Sutton's thesis.

"It's terribly hard to believe that," he says. "But I will go so far as to say that David Rockefeller will be skewed to what the Russians owe his Chase Manhattan Bank in commercial loans." Indeed, the Soviets do owe western financial institutions as much as $20 billion, according to the Federal Reserve. But those who follow Soviet credits assert that the U.S.S.R. needs connections to dollar credit too strongly to default on its debts.

It is the opinion of economist Joyce Kolko that both sides are in for deep trouble. Except militarily, the U.S.S.R. is not a strong country. And the West has just about dried up its ability to expand capitalism. The Third World is too deeply in debt, for one thing, she says, and markets in China and the Soviet Union are not going to pan out. She says they simply are too short of hard currency and outlines the severe problems coming in her book, "America and the Crisis of World Capitalism."

There is strong reason to believe, as Kolko suggests, that the real competition between the western and Soviet social systems will be staged in the Third World. Over the past several years, the U.S.S.R. has beefed up its naval forces. Indeed, as analyst Joseph Whelan says in an important Congressional Research Service study done for the House Committee on International Relations:

"Soviet activity has now extended beyond the Eurasian continent and the traditional 'national liberation zone' into Black Africa, suggesting the emergence of a new imperial phase in Russian history. Risks are apparent in the pursuit of this unmistakable imperialist policy that seeks to reconcile the requirements of détente in the West with the ideological imperative of revolutionary action in the Third World. Within this persisting, unresolved contradiction lie the seeds of potential . . . conflict."

But in his study Whelan documents a series of Soviet reversals in the Third World and doesn't think it will fare much better in its new adventures. In fact, Third World demands for a new international technological order are a downright embarrassment to the Soviet Union because the U.S.S.R. is lumped together with capitalist countries as technologically rich. Up to now, Brezhnev has not known how to respond to Third World demands for sharing technology.

So in a way two conditions exist in the Third World. One is the failure of Soviet Marxism to make much penetration and the other is the failure of western industrial capitalism to make an impact. Both are seen as enemies of Third World aspirations. To Third World leaders, both are part of the technological North. Thus, the Soviets and the Americans have, in a way, a common problem to solve.

There are attempts to build new definitions of reality here and there. One such builder is Howard Kurtz, who for the past 20 years has been intensely lobbying the Washington science and technology policy community for his concept of peace.

Kurtz almost escapes definition.

He is an aeronautical engineer by training and a theist by philosophy. Practically everyone in science policy circles in Washington knows him—from Congress' Office of Technology Assessment to the White House Office of Science & Technology Policy to the Advanced Research Projects Agency in the Pentagon.

The gist of his thought is this. The peace process today is really an arms process, bolstered by outmoded concepts of how wars are fought and, indeed, why the Soviet Union needs to expand. Kurtz says history shows that the Soviet Union always has tended to expand because it constantly feared encroachment by surrounding regions. The western military response to Soviet paranoia only increases that paranoia while lining the pockets of the arms industry.

He suggests another approach, taking maybe 10 to 20 years and involving the entire U.S. industrial and military establishment. The project would focus on world development through the techniques of military surveillance, sort of a latter-day interpretation of William James' 1910 essay, "The Moral Equivalent of War." This would give military techniques and efficiencies a nonwar outlet toward rebuilding society. He sees networks of satellites not only monitoring the world for hostile activity but, more important, for data on geology, geophysics, agriculture, natural resources, and environmental problems. If arms money went into economic and human development he believes the world would have its substitute for war.

William D. Carey, chief executive officer for the American Association for the Advancement of Science is another who insists on fresh thinking about the U.S., U.S.S.R., technology, and the Third World. Carey thinks along the conventional line that technological exports of any use to the Soviets should stop but that scientific exchanges should continue. But he does note a serious gap in thinking through the more "systemic" aspects of the competition between the two social and economic systems.

"I don't think we have any systematic answer," he says. "The whole trouble is that the more we get transfixed by the military escalation the more blurred our vision of the incendiary factors in the Third World becomes. There is no explicit process we come to in our policy management system here to properly calibrate the mix of U.S. interests in the Third World."

Carey believes the U.S. could have taken advantage of the Soviet move into Afghanistan to make some heavy propaganda points regarding its human rights policies in the Third World. "We could have shown the good cards we're playing in the Third World. But we can't even get this little Institute for Cooperative Technology through Congress. We don't argue for it in macro terms."

Another regret Carey has is the lack of global financial institutions' involvement in the evolution of a foreign policy that would deal with the new realities. Last August in an interview with C&EN, Jermen Gvishiani, deputy chairman of the Soviet State Committee for Science & Technology, emphasized that the U.S. and the U.S.S.R. face a "common enemy" that surmounts the political differences between the two systems. He didn't discuss how big a break the Soviet Union would have to make with its Russian-dominated past to make the dream of true cooperation come true. (Indeed, with the possible fall from favor of Gvishiani, such thoughts may be stilled for a time.) But his point was that the world was becoming too small, intertied, and dangerous for the two systems to dwell only on containment and competition. It wasn't the Brezhnev doctrine he was relating, but that the world could become such a dangerous place, by virtue of the imbalances now erupting, that the question would be one of common survival rather than the victory of one system over another. The enemy, he said, was disorder, chaos, or in the scientific analogy, entropy. This is where Soviet affairs consultant John J. Ford comes in with his views on reassessing the competition.

What the Soviets may have, Ford thinks, is a method of assessing instabilities within the capitalist system by virtue of their own techniques of "net assessment," or "correlation of forces." The military approaches to security, he says, may be totally out of phase with the dangers that jointly face capitalism and communism—which could well be overindustrialization, technology racing beyond the ability of Earth's resources to sustain the trend.

"Net assessment of the stability of East and West could be of the utmost importance to securing order in the 1980's," he tells C&EN. "U.S. strategic thought in the era of 'peaceful competition' might be focused on devising and implementing new governance processes rather than weapon responses in reply to new socialist weapons. Disruption of economic, energy distribution, international trade, social, and ecological networks

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These are areas where the U.S. and the Soviet Union could cooperate. And there are some efforts to begin such projects at the International Institute for Applied Systems Analysis near Vienna, Austria. The institute is jointly administered by the U.S. and U.S.S.R. It is the only research on which U.S. and Soviet scientists work side by side on common global problems.

For his part, Ford helped organize a special series of Defense Department meetings on the effectiveness of command, control, communication, and information systems in the defense network. Proceedings are not available, but the meetings attempted to inject wider-ranging thought into the meaning of security in a time of technological complexity.

What things appear to boil down to is this. U.S. technological strategy toward the Soviet Union is embodied in the Export Control Act. But that is not enough because administration of the act fails to take into account a strategy for conducting a genuine global competition with the Soviet system. Apparently, no such strategy exists. For that matter, regulations seldom differentiate between technological know-how and its product.

One would think, for example, that the soon-to-be-funded Institute for Scientific & Technical Cooperation in the State Department would embody some concept for applying technology to the Third World as a conscious response to the threat from Marxism. But those promoting ISTC say no such linkage should exist because the recipient countries would see themselves only a a ploy in the struggle between two superpowers, neither of which is particularly liked.

It is a dilemma, and in the end may bear on simple good will between peoples. To the Third World, both the U.S. and U.S.S.R. are technological superpowers. They play their war games while the rest of the world lies in want. Both powers face severe internal economic difficulties, yet both see the other side on the wane. Capitalism is seen as internally overextended with no place to grow; Soviet expansion is seen as ideologically tired, victim of traditional Russian paranoia, and, according to some analysts, under attack from Soviet intellectuals.

It would seem that the search for that "common enemy" is worth undertaking. It may have something to do with excess industrialization, excessive quest for power, perhaps even excessive quest for profit. □

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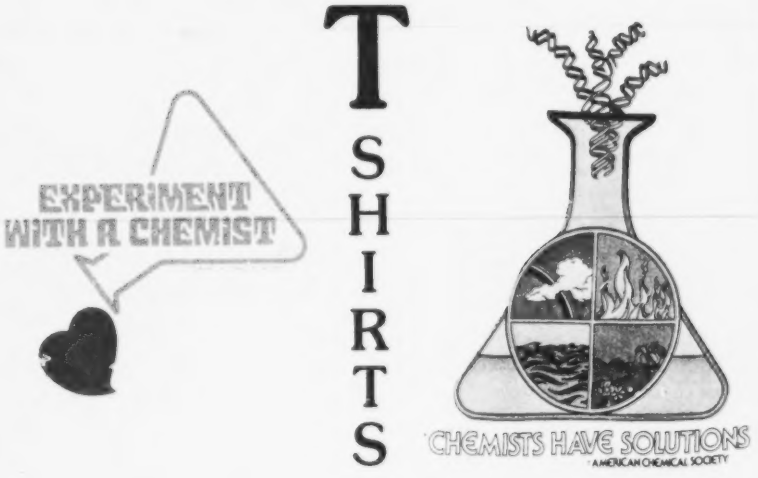

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